

From: Robert Siegfried [mailto:rsiegfried@valleywater.org]

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To: Agriculture Water Use Efficiency

Cc: Jemaa, Fethi Ben

Subject: change in stored water; ETaw

AgWUE,

Subjects: change in stored water on field or in soil (depth or volume)
ETaw

SBx 7 – 7 appears not to define the input components of agricultural water use efficiency, but Chapter 3, article 2, on the content of agricultural water management plans, requests agricultural water suppliers to describe the quantity and quality of water resources, including “Other water supplies” (10826 (b(3))). DWR should consider inclusion of precipitation in defining agricultural water use efficiency, for precipitation is an element of the state’s water supply. Agricultural water use efficiency is not limited to efficient use only of irrigation water.

It is desirable to eliminate the need for estimating changes in soil moisture storage at the field scale (as indicated in the spreadsheet). Field scale determination of soil moisture will never be done, and estimation is prone to substantial error over any extent larger than a research plot.

If all precipitation is included as water supply and distinctions between effective and non-effective precipitation are neglected, estimation of soil water storage can be removed as a term. The denominator in the agricultural water use efficiency equation then becomes the sum of all inputs, whether effective or not. The error of including non-effective precipitation probably does not exceed the error inherent in trying to distinguish between effective and non-effective precipitation. Infiltration is a function of many variables, important among which is soil management.

California is festooned with rain gauges operated by a number of agencies and districts – numerous enough to support interpolation. Precipitation can be measured more accurately than soil water content. Stream gauge data perhaps can be used to correct for runoff.

Inclusion of precipitation and removal of the soil water storage term provide the additional advantage of facilitating elimination of the arbitrary distinction between “applied water” and other sources of water. ETaw would then become simply ET.

Regards,

Bob Siegfried

Santa Clara Valley Water District

5750 Almaden Expressway

San Jose CA 95118

408 265 2607